1: Am J Pathol. 1989 Nov;135(5):783-92. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Biological grading of breast cancer using antibodies to proliferating cells and other markers.

Bacus SS, Goldschmidt R, Chin D, Moran G, Weinberg D, Bacus JW.

Cell Analysis Systems, Inc., Lombard, IL 60148.

Quantitation of immunohistochemical staining by image analysis was performed on 50 breast cancers stained with the monoclonal antibody Ki-67 to determine the growth fraction and its correlation with tumor grade. A high degree of correlation was shown. For each case the DNA ploidy was determined by quantitation of the DNA Feulgen stain by computerized microdensitometry. DNA content of breast tumor cells correlated to the histopathologic grade at which poorly differentiated tumors are more likely to be aneuploid. Quantitation of immunohistochemistry for estrogen and progesterone receptors had a high degree of correlation with the steroid binding assay, such as dextran-coated charcoal assay (DCCA), and were weakly correlated to histologic grade. In summary, our results indicated that quantitation of Ki-67-positive nuclear area and of DNA content by image analysis provides an objective method for assessing tumor cell growth fraction and DNA ploidy. Quantitation of steroid receptors by immunohistochemistry is a better and easier technique than those currently used to determine the best therapy for postmenopausal women. These methods can be performed on small frozen sections or needle aspirates in quantities that are insufficient for current steroid binding assays. Thus, this method is prognosticly useful even for patients with small breast lesions.

PMID: 2817079 [PubMed - indexed for MEDLINE]

Display Abstract Show: 20 Sort Send to Text

1: Cancer Res. 1993 Nov 1;53(21):5251-61. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Neu differentiation factor (heregulin) induces expression of intercellular adhesion molecule 1: implications for mammary tumors.

Bacus SS, Gudkov AV, Zelnick CR, Chin D, Stern R, Stancovski I, Peles E, Ben-Baruch N, Farbstein H, Lupu R, et al.

Cell Analysis Systems, Inc., Elmhurst, Illinois 60126.

Neu differentiation factor (NDF, also called heregulin) is a 44-kilodalton glycoprotein that stimulates tyrosine phosphorylation of the Neu/HER-2 receptor and induces phenotypic differentiation of certain mammary cancer cell lines to growth-arrested and milk-producing cells. To determine which molecules participate in the concomitant morphological alterations, we analyzed the expression of several cytoskeletal and surface molecules and found that NDF elevated the expression of the intercellular adhesion molecule 1 (ICAM-1) in cultured AU-565 human adenocarcinoma cells. The levels of both the protein and the mRNA of ICAM-1 were elevated after 3-5 days of treatment with NDF. Elevated expression of ICAM-1 was induced also by gamma-interferon and by the tumor-promoting phorbol ester (PMA), albeit with different kinetics. Down-regulation of protein kinase C or its inhibition by calphostin C partially inhibited the effect of NDF, implying that the induction of ICAM-1 may be mediated by protein kinase C. NDF transcripts were detectable in 3 of 9 human mammary tumors, suggesting that the in vitro effect of the factor may be relevant to breast cancer. By selecting Neu-positive human mammary tumors ($n = 39$), we found a significant correlation ($P < 0.001$) between the expression of ICAM-1 and histological features of invasive ductal carcinoma with a prominent carcinoma in situ component. When cultured in vitro the cells of these tumors grew in clusters and formed domelike structures reminiscent of comedo-type carcinoma in situ. In addition, the majority of patients with tumors that coexpressed ICAM-1 and Neu had no lymph node involvement, unlike most Neu-positive but ICAM-1-negative tumors, which metastasized to the lymphatic system. Taken together, our observations suggest that the induction of ICAM-1 by NDF may affect the morphology, differentiation state, and metastasis of Neu-expressing mammary tumor cells.

1: Am J Clin Pathol. 1994 Oct;102(4 Suppl 1):S13-24. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Expression of the erbB-2 family of growth factor receptors and their ligands in breast cancers. Implication for tumor biology and clinical behavior.

Bacus SS, Zelnick CR, Plowman G, Yarden Y.

Advanced Cellular Diagnostics, Inc., Elmhurst, Illinois.

Transmembrane receptor tyrosine kinases that bind to growth factors transmit signals that are essential to growth and differentiation. These receptors can be classified into groups based on their structure. One group implicated in the pathogenesis of breast cancer contains receptors belonging to the erbB family. This group includes the epidermal growth factor receptors, the HER-2/neu (erbB-2), HER-3, and HER-4. Despite the structural similarity of these receptors, HER-2/neu, HER-4, and HER-3 do not bind to any ligand of the epidermal growth factor receptor. However, a 44-kD glycoprotein called neu differentiation factor (neu differentiation factor/heregulin) has been isolated. This ligand phosphorylates the HER-2/neu receptor and binds directly to HER-4 and HER-3. The abundance of erbB receptors and their ligands in breast cancers points to their functional importance in the pathogenesis and biological behavior of breast cancers. Furthermore, these receptors and ligands may hold a promise for targeted therapy for breast cancer in the future.

Publication Types:

- Review
- Review, Tutorial

PMID: 7942609 [PubMed - indexed for MEDLINE]

1: Cancer Res. 1997 Dec 1;57(23):5217-20. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Intracellular localization of p53 tumor suppressor protein in gamma-irradiated cells is cell cycle regulated and determined by the nucleus.

Komarova EA, Zelnick CR, Chin D, Zeremski M, Gleiberman AS, Bacus SS, Gudkov AV.

Department of Molecular Genetics, University of Illinois, Chicago 60607, USA.

DNA damage leads to the stabilization of p53 protein and its translocation to the nucleus, resulting in activation or suppression of p53-responsive genes. However, a significant proportion of cell nuclei remain negative for p53 and p53-inducible cyclin-dependent kinase inhibitor p21waf1 after a single dose of gamma-irradiation. Quantitation of DNA content in p53-positive and -negative nuclei 4-6 h after 10 Gy of gamma-irradiation of human breast carcinoma MCF7 cells, fibrosarcoma HT1080 cells, and diploid skin fibroblasts showed that p53 and p21waf1 nuclear accumulation occurs predominantly in the G1 phase and at the beginning of the S phase of the cell cycle. The majority of the nuclei in late S phase and in G2-M phase remained p53- and p21waf1-negative. This suggests that there is a cell cycle window during which p53 can accumulate in the nucleus and activate expression of p21waf1. To determine whether cell cycle-dependent distribution of p53 is caused by cytoplasmic modifications of p53 protein or by properties of the nucleus, p53 localization was analyzed in multinucleated cells obtained by polyethylene glycol-mediated cell fusion. Dramatic differences in p53 accumulation were found among the nuclei in individual multinucleated cells. Distribution of p53-positive and -negative nuclei among the phases of the cell cycle was similar to that observed in a regular cell population. These results suggest that the observed differences in p53 accumulation in the nuclei of irradiated cells are determined by cell cycle-dependent nuclear functions. In contrast to p53, p21waf1 was equally distributed among the nuclei of multinucleated cells regardless of the stage of the cell cycle, indicating that the observed phenomenon is specific for p53.

PMID: 9393737 [PubMed - indexed for MEDLINE]

1: Mol Pharmacol. 2002 Mar;61(3):524-32.

Endothelin-1 protects ovarian carcinoma cells against paclitaxel-induced apoptosis: requirement for Akt activation.

Del Bufalo D, Di Castro V, Biroccio A, Varmi M, Salani D, Rosano L, Trisciuoglio D, Spinella F, Bagnato A.

Experimental Chemotherapy Laboratories, Regina Elena Cancer Institute, Rome, Italy.

Endothelin-1 (ET-1) is a powerful mitogenic peptide produced by different tumors. In ovarian carcinoma cells, ET-1 acts as an autocrine growth factor, selectively through ET(A) receptor (ET(A)R), which is predominantly expressed in tumor cells. The aim of this study was to examine whether ET-1 plays a role in the sensitivity of three ovarian carcinoma cell lines (OVCA 433, HEY, and SK-OV-3) to apoptosis induced by two different stimuli. Our results demonstrated that the addition of ET-1 markedly inhibited serum withdrawal and paclitaxel-induced apoptosis in a concentration-dependent manner, as demonstrated by Annexin-V assay, sub-G(1) peak in DNA content histograms, internucleosomal DNA fragmentation, and terminal deoxynucleotidyl transferase-mediated dUTP biotin nick-end labeling method. Pretreatment of the cells with an ET(A)R antagonist, BQ 123, reversed the ET-1-induced protective effect. Paclitaxel-induced apoptosis resulted in the phosphorylation of Bcl-2 that was suppressed by the addition of ET-1. Further analysis of the signaling pathway demonstrated that ET-1 stimulated Akt activation. The phosphatidylinositol 3-kinase (PI3-K) inhibitor wortmannin blocked ET-1-induced Akt phosphorylation. Inhibition of ET-1-stimulated mitogen-activated protein kinase activity did not affect ET-1 protection from paclitaxel-mediated apoptosis. Moreover, BQ 123 blocked the Akt-mediated pathway activated by ET-1, sensitizing ovarian carcinoma cells to paclitaxel treatment. These results establish a novel role for ET-1 in determining protection of ovarian carcinoma cells against paclitaxel-induced apoptosis through Bcl-2-dependent and PI3-K-mediated Akt pathways and suggest that ET-1 and ET(A)R could represent important targets for anticancer therapy.

1: Anal Quant Cytol Histol. 1997 Aug;19(4):316-28. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Potential use of image analysis for the evaluation of cellular predicting factors for therapeutic response in breast cancers.

Bacus S, Chin D, Stewart J, Zelnick C, Mahvi D, Gilchrist K.

Advanced Cellular Diagnostics, Inc., Elmhurst, Illinois 60126, USA.

OBJECTIVE: To summarize the current literature on the association between biologic prognostic factors and therapeutic implications. STUDY DESIGN: To illustrate how these biologic factors are determined and how they can affect treatment, three patients' biologic profiles and their implications for the patients' choice of therapeutic approaches were analyzed. Immunohistochemical techniques combined with image analysis was used to evaluate estrogen receptors, progesterone receptors, proliferation index and erbB-2. Visual assessment was used to evaluate P glycoprotein (MDR1), EGFR and p53. RESULTS: Data from the literature stress the importance of biologic profiles for defining tumor behavior and patient management. The examples of patients' biologic factors illustrated the possible importance of these factors for helping to design treatment. CONCLUSION: Today the data on the association of patient response to chemotherapy and molecular markers are only starting to accumulate. A larger database is needed for a more precise estimation of response probability in order to help physicians decide between treatment options.

Publication Types:
- Review
- Review, Tutorial

PMID: 9267565 [PubMed - indexed for MEDLINE]

1: Am J Clin Pathol. 1988 Sep;90(3):233-9. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Comment in:
- Am J Clin Pathol. 1989 Oct;92(4):559.

The evaluation of estrogen receptor in primary breast carcinoma by computer-assisted image analysis.

Bacus S, Flowers JL, Press MF, Bacus JW, McCarty KS Jr.

Cell Analysis Systems, Lombard, Chicago, Illinois.

A monoclonal antibody prepared against estrogen receptor has been shown to be specific and sensitive for the detection of estrogen receptor in human breast lesions by use of immunohistochemical methods. Two hundred selected cases of primary breast carcinoma were assayed for estrogen receptor content by biochemical and immunohistochemical procedures. Quantitative evaluation was by biochemical, immunohistochemical, and automated computer-assisted image analysis using the Cell Analysis System's CAS/100 machine (Lombard, IL). Quantitative estrogen receptor content was determined by dextran-coated charcoal analysis and sucrose density gradient analysis. Immunohistochemical evaluation incorporated both intensity and distribution of staining, yielding a subjective score, histologic score (HSCORE). An objective quantitation, also incorporating intensity and distribution of staining, was done by computer-assisted image analysis, quantitative immunocytochemical score (QIC SCORE). HSCORE analysis was done with and without methyl green counterstain with no loss of sensitivity. Comparison of QIC SCORE with the biochemical and immunohistochemical analysis of the tissues examined revealed excellent sensitivities and specificities. These data suggest that automated image analysis provides an effective qualitative and quantitative means of evaluating estrogen receptor content in human breast cancers.

PMID: 2458030 [PubMed - indexed for MEDLINE]

1: Pathol Annu. 1993;28 Pt 1:179-204. Related Articles, Links

Entrez PubMed

Application of image analysis to the evaluation of cellular prognostic factors in breast carcinoma.

Bacus SS, Ruby SG.

Cell Analysis Systems Reference Laboratory, Elmhurst, Illinois.

PubMed Services

Publication Types:
- Review
- Review, Tutorial

PMID: 8093211 [PubMed - indexed for MEDLINE]

Related Resources

Display Abstract Show: 20 Sort Send to Text

1: Mol Carcinog. 1990;3(6):350-62. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Differentiation of cultured human breast cancer cells (AU-565 and MCF-7) associated with loss of cell surface HER-2/neu antigen.

Bacus SS, Kiguchi K, Chin D, King CR, Huberman E.

Cell Analysis Systems, Inc., Elmhurst, Illinois.

The relationship between terminal cell differentiation and changes in the subcellular levels of the HER-2/neu antigen was investigated in cultured human breast cancer cells: AU-565 cells (which overexpress the HER-2/neu gene) and MCF-7 cells (which do not overexpress this gene). Differentiation was achieved by treating the cells with mycophenolic acid (MPA), phorbol 12-myristate 13-acetate (PMA), retinoic acid (RA), or the TA-1 monoclonal antibody to the extracellular domain of the HER-2/neu protein. Ten to twenty percent of the cells in untreated, sparsely growing AU-565 cultures exhibited morphological maturation characterized by large lacy nuclei surrounded by sizable flat cytoplasms. A fraction of these cells harbored milk factors such as casein and large lipid droplets. Treatment of the AU-565 cells for 4 d with 9 microM MPA, 1.6 nM PMA, 2.5 microM RA, or 1 microgram/mL TA-1 antibody resulted in cell growth inhibition and an increase in the percentage of cells (48-97%) that exhibit a mature phenotype. MCF-7 cells were also susceptible to differentiation by MPA and RA, but to a lesser degree than the AU-565 cells. Differentiation in the AU-565 and MCF-7 cells was associated with reduced immunostaining for the HER-2/neu protein at the cell surface membrane and with a transient increased diffuse immunostaining for this protein in the cytoplasm.

PMID: 1980588 [PubMed - indexed for MEDLINE]

Display Abstract Show: 20 Sort Send to Text

1: Cancer Res. 1992 May 1;52(9):2580-9. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Tumor-inhibitory monoclonal antibodies to the HER-2/Neu receptor induce differentiation of human breast cancer cells.

Bacus SS, Stancovski I, Huberman E, Chin D, Hurwitz E, Mills GB, Ullrich A, Sela M, Yarden Y.

Cell Analysis Systems, Inc., Elmhurst, Illinois 60126.

The HER-2/neu protooncogene (also called erbB-2) encodes a tyrosine kinase receptor for a polypeptide growth-regulatory molecule. Amplification and overexpression of the gene have been frequently observed in human adenocarcinomas and correlated with poor prognosis. To explore the potential of antibody therapy directed at the HER-2/Neu receptor, we have raised a panel of murine monoclonal antibodies to the human protein, and tested their effect on the tumorigenic growth of HER-2/neu-transfected fibroblasts in athymic mice. We previously reported that the i.p. injected antibodies either inhibited or accelerated the tumorigenic growth of HER-2/neu transfectants in athymic mice. Here we report that these opposing effects were induced also by i.v. injected antibodies, they lasted over 7 weeks, and were probably mediated by distinct epitopes on the receptor molecule. To understand the cellular mechanisms underlying antibody-induced tumor inhibition, we tested the effect of the monoclonal antibodies on various cultured human breast cancer cells. Our analysis revealed that the tumor-inhibitory antibodies specifically induced phenotypic cellular differentiation that included growth arrest at late S or early G2 phase of the cell cycle, markedly altered cytoplasm and nuclear morphology, synthesis and secretion of milk components (casein and lipids), and translocation of the HER-2/Neu protein to cytoplasmic and perinuclear sites. The extent of cellular differentiation by various antibodies could be correlated with their tumor-inhibitory potential, whereas a tumor-stimulatory monoclonal antibody or control immunoglobulin were completely inactive with respect to cellular differentiation. Taken together, our in vivo and in vitro studies correlate the tumor inhibitory potential of monoclonal antibodies to HER-2/Neu with their capacity to induce cellular differentiation in vitro. This observation may hold promise for immunotherapy of cancers that express the HER-2/neu oncogene.

1: Anal Quant Cytol Histol. 1997 Aug;19(4):316-28. Related Articles, Links

Entrez PubMed

PubMed Services

Related Resources

Potential use of image analysis for the evaluation of cellular predicting factors for therapeutic response in breast cancers.

Bacus S, Chin D, Stewart J, Zelnick C, Mahvi D, Gilchrist K.

Advanced Cellular Diagnostics, Inc., Elmhurst, Illinois 60126, USA.

OBJECTIVE: To summarize the current literature on the association between biologic prognostic factors and therapeutic implications. STUDY DESIGN: To illustrate how these biologic factors are determined and how they can affect treatment, three patients' biologic profiles and their implications for the patients' choice of therapeutic approaches were analyzed. Immunohistochemical techniques combined with image analysis was used to evaluate estrogen receptors, progesterone receptors, proliferation index and erbB-2. Visual assessment was used to evaluate P glycoprotein (MDR1), EGFR and p53. RESULTS: Data from the literature stress the importance of biologic profiles for defining tumor behavior and patient management. The examples of patients' biologic factors illustrated the possible importance of these factors for helping to design treatment. CONCLUSION: Today the data on the association of patient response to chemotherapy and molecular markers are only starting to accumulate. A larger database is needed for a more precise estimation of response probability in order to help physicians decide between treatment options.

Publication Types:
- Review
- Review, Tutorial

PMID: 9267565 [PubMed - indexed for MEDLINE]

Entrez PubMed

PubMed Services

Related Resources

1: Wang HQ, Quan T, He T, Franke TF, Voorhees JJ, Fisher GJ. Related Articles, Links

EGF receptor-dependent, NF-kappa B independent activation of PI-3-kinase/Akt pathway inhibits ultraviolet irradiation-induced caspases 3, 8, and 9 in human keratinocytes.
J Biol Chem. 2003 Sep 2 [Epub ahead of print]
PMID: 12952968 [PubMed - as supplied by publisher]

2: Hartel-Schenk S, Gratchev A, Hanski ML, Ogorek D, Trendelenburg G, Hummel M, Hopfner M, Scherubl H, Zeitz M, Hanski C. Related Articles, Links

Novel adapter protein AP162 connects a sialyl-Le(x)-positive mucin with an apoptotic signal transduction pathway.
Glycoconj J. 2001 Nov-Dec;18(11-12):915-23.
PMID: 12820725 [PubMed - indexed for MEDLINE]

3: Shimamura H, Terada Y, Okado T, Tanaka H, Inoshita S, Sasaki S. Related Articles, Links

The PI3-kinase-Akt pathway promotes mesangial cell survival and inhibits apoptosis in vitro via NF-kappa B and Bad.
J Am Soc Nephrol. 2003 Jun;14(6):1427-34.
PMID: 12761242 [PubMed - indexed for MEDLINE]

4: Uenaka A, Hata H, Win S, Ono T, Wada H, Nakayama E. Related Articles, Links

ELISPOT cloning of tumor antigens recognized by cytotoxic T-lymphocytes from a cDNA expression library.
Cancer Immun. 2001 Jul 13;1:8.
PMID: 12747769 [PubMed - indexed for MEDLINE]

5: Yang CC, Lin HP, Chen CS, Yang YT, Tseng PH, Rangnekar VM, Chen CS. Related Articles, Links

Bcl-xL mediates a survival mechanism independent of the phosphoinositide 3-kinase/Akt pathway in prostate cancer cells.
J Biol Chem. 2003 Jul 11;278(28):25872-8. Epub 2003 May 08.
PMID: 12738789 [PubMed - indexed for MEDLINE]

6: Nesslinger NJ, Shi XB, deVere White RW. Related Articles, Links

Androgen-independent growth of LNCaP prostate cancer cells is mediated by gain-of-function mutant p53.
Cancer Res. 2003 May 1;63(9):2228-33.
PMID: 12727844 [PubMed - indexed for MEDLINE]

7: Zhu K, Amin MA, Kim MJ, Katschke KJ Jr, Park CC, Koch AE. Related Articles, Links

A novel function for a glucose analog of blood group H antigen as a mediator of leukocyte-endothelial adhesion via intracellular adhesion molecule 1.
J Biol Chem. 2003 Jun 13;278(24):21869-77. Epub 2003 Apr 02.
PMID: 12672794 [PubMed - indexed for MEDLINE]

8: Bianco C, Strizzi L, Rehman A, Normanno N, Wechselberger C, Sun Y, Khan N, Hirota M, Adkins H, Williams K, Margolis RU, Sanicola M, Salomon DS. Related Articles, Links

A Nodal- and ALK4-independent signaling pathway activated by Cripto-1 through Glypican-1 and c-Src.
Cancer Res. 2003 Mar 15;63(6):1192-7. Erratum in: Cancer Res. 2003 Apr 15;63(8):1997.
PMID: 12649175 [PubMed - indexed for MEDLINE]

9: Tokuda H, Hatakeyama D, Shibata T, Akamatsu S, Oiso Y, Kozawa O. Related Articles, Links

p38 MAP kinase regulates BMP-4-stimulated VEGF synthesis via p70 S6 kinase in osteoblasts.
Am J Physiol Endocrinol Metab. 2003 Jun;284(6):E1202-9. Epub 2003 Mar 11.
PMID: 12637256 [PubMed - indexed for MEDLINE]

10: Astoul E, Laurence AD, Totty N, Beer S, Alexander DR, Cantrell DA. Related Articles, Links

Approaches to define antigen receptor-induced serine kinase signal transduction pathways.
J Biol Chem. 2003 Mar 14;278(11):9267-75. Epub 2003 Jan 05.
PMID: 12515807 [PubMed - indexed for MEDLINE]

11: West KA, Brognard J, Clark AS, Linnoila IR, Yang X, Swain SM, Harris C, Belinsky S, Dennis PA. Related Articles, Links

Rapid Akt activation by nicotine and a tobacco carcinogen modulates the phenotype of normal human airway epithelial cells.
J Clin Invest. 2003 Jan;111(1):81-90.
PMID: 12511591 [PubMed - indexed for MEDLINE]

12: Bar-Yehuda S, Madi L, Barak D, Mittelman M, Ardon E, Ochaion A, Cohn S, Fishman P. Related Articles, Links

Agonists to the A3 adenosine receptor induce G-CSF production via NF-kappaB activation: a new class of myeloprotective agents.
Exp Hematol. 2002 Dec;30(12):1390-8.
PMID: 12482500 [PubMed - indexed for MEDLINE]

13: Clark AS, West K, Streicher S, Dennis PA. Related Articles, Links

Constitutive and inducible Akt activity promotes resistance to chemotherapy, trastuzumab, or tamoxifen in breast cancer cells.
Mol Cancer Ther. 2002 Jul;1(9):707-17.
PMID: 12479367 [PubMed - indexed for MEDLINE]

14: Kim S, Kang J, Hu W, Evers BM, Chung DH. Related Articles, Links

Geldanamycin decreases Raf-1 and Akt levels and induces apoptosis in neuroblastomas.
Int J Cancer. 2003 Jan 20;103(3):352-9.
PMID: 12471618 [PubMed - indexed for MEDLINE]

15: Zhu J, Song X, Lin HP, Young DC, Yan S, Marquez VE, Chen CS. Related Articles, Links

Using cyclooxygenase-2 inhibitors as molecular platforms to develop a new class of apoptosis-inducing agents.
J Natl Cancer Inst. 2002 Dec 4;94(23):1745-57.
PMID: 12464646 [PubMed - indexed for MEDLINE]

16: Sciacca L, Mineo R, Pandini G, Murabito A, Vigneri R, Belfiore A. Related Articles, Links

In IGF-I receptor-deficient leiomyosarcoma cells autocrine IGF-II induces cell invasion and protection from apoptosis via the insulin receptor isoform A.
Oncogene. 2002 Nov 28;21(54):8240-50.
PMID: 12447687 [PubMed - indexed for MEDLINE]

17: Masuda M, Suzui M, Lim JT, Deguchi A, Soh JW, Weinstein IB. Related Articles, Links

Epigallocatechin-3-gallate decreases VEGF production in head and neck and breast carcinoma cells by inhibiting EGFR-related pathways of signal transduction.
J Exp Ther Oncol. 2002 Nov-Dec;2(6):350-9.
PMID: 12440226 [PubMed - indexed for MEDLINE]

18: Ho R, Eggert A, Hishiki T, Minturn JE, Ikegaki N, Foster P, Camoratto AM, Evans AE, Brodeur GM. Related Articles, Links

Resistance to chemotherapy mediated by TrkB in neuroblastomas.
Cancer Res. 2002 Nov 15;62(22):6462-6.
PMID: 12438236 [PubMed - indexed for MEDLINE]

19: Emanueli C, Salis MB, Pinna A, Graiani G, Manni L, Madeddu P. Related Articles, Links

Nerve growth factor promotes angiogenesis and arteriogenesis in ischemic hindlimbs.
Circulation. 2002 Oct 22;106(17):2257-62.
PMID: 12390957 [PubMed - indexed for MEDLINE]

☐ **20:** Zhou Y, Larsen PH, Hao C, Yong VW. Related Articles, Links

CXCR4 is a major chemokine receptor on glioma cells and mediates their survival.

J Biol Chem. 2002 Dec 20;277(51):49481-7. Epub 2002 Oct 17.
PMID: 12388552 [PubMed - indexed for MEDLINE]

Sep 4 2003 10:00:42

Entrez PubMed

PubMed Services

Related Resources

21: Lei X, Bandyopadhyay A, Le T, Sun L. Related Articles, Links

Autocrine TGFbeta supports growth and survival of human breast cancer MDA-MB-231 cells.
Oncogene. 2002 Oct 24;21(49):7514-23.
PMID: 12386814 [PubMed - indexed for MEDLINE]

22: Schmidt M, Hovelmann S, Beckers TL. Related Articles, Links

A novel form of constitutively active farnesylated Akt1 prevents mammary epithelial cells from anoikis and suppresses chemotherapy-induced apoptosis.
Br J Cancer. 2002 Oct 7;87(8):924-32.
PMID: 12373610 [PubMed - indexed for MEDLINE]

23: Bompard G, Puech C, Prebois C, Vignon F, Freiss G. Related Articles, Links

Protein-tyrosine phosphatase PTPL1/FAP-1 triggers apoptosis in human breast cancer cells.
J Biol Chem. 2002 Dec 6;277(49):47861-9. Epub 2002 Sep 26.
PMID: 12354757 [PubMed - indexed for MEDLINE]

24: Howie D, Okamoto S, Rietdijk S, Clarke K, Wang N, Gullo C, Bruggeman JP, Manning S, Coyle AJ, Greenfield E, Kuchroo V, Terhorst C. Related Articles, Links

The role of SAP in murine CD150 (SLAM)-mediated T-cell proliferation and interferon gamma production.
Blood. 2002 Oct 15;100(8):2899-907.
PMID: 12351401 [PubMed - indexed for MEDLINE]

25: Reuveni H, Livnah N, Geiger T, Klein S, Ohne O, Cohen I, Benhar M, Gellerman G, Levitzki A. Related Articles, Links

Toward a PKB inhibitor: modification of a selective PKA inhibitor by rational design.
Biochemistry. 2002 Aug 13;41(32):10304-14.
PMID: 12162746 [PubMed - indexed for MEDLINE]

26: Zhang H, Zha X, Tan Y, Hornbeck PV, Mastrangelo AJ, Alessi DR, Polakiewicz RD, Comb MJ. Related Articles, Links

Phosphoprotein analysis using antibodies broadly reactive against phosphorylated motifs.
J Biol Chem. 2002 Oct 18;277(42):39379-87. Epub 2002 Jul 31.
PMID: 12151408 [PubMed - indexed for MEDLINE]

27: Xagorari A, Roussos C, Papapetropoulos A. Related Articles, Links

Inhibition of LPS-stimulated pathways in macrophages by the flavonoid luteolin.
Br J Pharmacol. 2002 Aug;136(7):1058-64.
PMID: 12145106 [PubMed - indexed for MEDLINE]

28: Chen HL, Demiralp B, Schneider A, Koh AJ, Silve C, Wang CY, McCauley LK. Related Articles, Links

Parathyroid hormone and parathyroid hormone-related protein exert both pro- and anti-apoptotic effects in mesenchymal cells.
J Biol Chem. 2002 May 31;277(22):19374-81. Epub 2002 Mar 15.
PMID: 11897779 [PubMed - indexed for MEDLINE]

29: Dransfeld O, Rakatzi I, Sasson S, Gruzman A, Schmitt M, Haussinger D, Eckel J. Related Articles, Links

Eicosanoids participate in the regulation of cardiac glucose transport by contribution to a rearrangement of actin cytoskeletal elements.
Biochem J. 2001 Oct 1;359(Pt 1):47-54.
PMID: 11563968 [PubMed - indexed for MEDLINE]

30: Kijowski J, Baj-Krzyworzeka M, Majka M, Reca R, Marquez LA, Christofidou-Solomidou M, Janowska-Wieczorek A, Ratajczak MZ. Related Articles, Links

The SDF-1-CXCR4 axis stimulates VEGF secretion and activates integrins but does not affect proliferation and survival in lymphohematopoietic cells.
Stem Cells. 2001;19(5):453-66.
PMID: 11553854 [PubMed - indexed for MEDLINE]

31: Majka M, Ratajczak J, Baj-Krzyworzek M, Kijowski J, Reca R, Machalinski B, Kubicze K, Ratajczak MZ. Related Articles, Links

Biological significance of chemokine receptor expression by normal human megakaryoblasts.
Folia Histochem Cytobiol. 2001;39(3):235-44.
PMID: 11534779 [PubMed - indexed for MEDLINE]

32: Koistinen P, Siitonen T, Mantymaa P, Saily M, Kinnula V, Savolainen ER, Soini Y. Related Articles, Links

Regulation of the acute myeloid leukemia cell line OCI/AML-2 by endothelial nitric oxide synthase under the control of a vascular endothelial growth factor signaling system.
Leukemia. 2001 Sep;15(9):1433-41.
PMID: 11516104 [PubMed - indexed for MEDLINE]

33: Thakkar H, Chen X, Tyan F, Gim S, Robinson H, Lee C, Pandey SK, Nwokorie C, Onwudiwe N, Srivastava RK. Related Articles, Links

Pro-survival function of Akt/protein kinase B in prostate cancer cells. Relationship with TRAIL resistance.
J Biol Chem. 2001 Oct 19;276(42):38361-9. Epub 2001 Jul 18. Retraction in: J Biol Chem. 2002 Aug 16;277(33):30408.
PMID: 11461904 [PubMed - indexed for MEDLINE]

34: Li P, Nicosia SV, Bai W. Related Articles, Links

Antagonism between PTEN/MMAC1/TEP-1 and androgen receptor in growth and apoptosis of prostatic cancer cells.
J Biol Chem. 2001 Jun 8;276(23):20444-50. Epub 2001 Mar 16.
PMID: 11278645 [PubMed - indexed for MEDLINE]

35: Breitschopf K, Zeiher AM, Dimmeler S. Related Articles, Links

Pro-atherogenic factors induce telomerase inactivation in endothelial cells through an Akt-dependent mechanism.
FEBS Lett. 2001 Mar 23;493(1):21-5.
PMID: 11277998 [PubMed - indexed for MEDLINE]

36: Ouchi N, Kihara S, Arita Y, Okamoto Y, Maeda K, Kuriyama H, Hotta K, Nishida M, Takahashi M, Muraguchi M, Ohmoto Y, Nakamura T, Yamashita S, Funahashi T, Matsuzawa Y. Related Articles, Links

Adiponectin, an adipocyte-derived plasma protein, inhibits endothelial NF-kappaB signaling through a cAMP-dependent pathway.
Circulation. 2000 Sep 12;102(11):1296-301.
PMID: 10982546 [PubMed - indexed for MEDLINE]

37: Versteeg HH, Nijhuis E, van den Brink GR, Evertzen M, Pynaert GN, van Deventer SJ, Coffer PJ, Peppelenbosch MP. Related Articles, Links

A new phosphospecific cell-based ELISA for p42/p44 mitogen-activated protein kinase (MAPK), p38 MAPK, protein kinase B and cAMP-response-element-binding protein.
Biochem J. 2000 Sep 15;350 Pt 3:717-22.
PMID: 10970784 [PubMed - indexed for MEDLINE]

38: Zhong H, Chiles K, Feldser D, Laughner E, Hanrahan C, Georgescu MM, Simons JW, Semenza GL. Related Articles, Links

Modulation of hypoxia-inducible factor 1alpha expression by the epidermal growth factor/phosphatidylinositol 3-kinase/PTEN/AKT/FRAP pathway in human prostate cancer cells: implications for tumor angiogenesis and therapeutics.
Cancer Res. 2000 Mar 15;60(6):1541-5.
PMID: 10749120 [PubMed - indexed for MEDLINE]

39: Matsui T, Li L, del MonteF, Fukui Y, Franke TF, Hajjar RJ, Rosenzweig A. Related Articles, Links

Adenoviral gene transfer of activated phosphatidylinositol 3'-kinase and Akt inhibits apoptosis of hypoxic cardiomyocytes in vitro.
Circulation. 1999 Dec 7;100(23):2373-9.
PMID: 10587343 [PubMed - indexed for MEDLINE]

☐ **40:** Allen MP, Zeng C, Schneider K, Xiong X, Meintzer MK, Bellosta P, Basilico C, Varnum B, Heidenreich KA, Wierman ME. Related Articles, Links

Growth arrest-specific gene 6 (Gas6)/adhesion related kinase (Ark) signaling promotes gonadotropin-releasing hormone neuronal survival via extracellular signal-regulated kinase (ERK) and Akt.
Mol Endocrinol. 1999 Feb;13(2):191-201.
PMID: 9973250 [PubMed - indexed for MEDLINE]

NCBI PubMed National Library of Medicine NLM

PubMed Nucleotide Protein Genome Structure PMC Taxonomy OMIM Bo

Search PubMed for BAcus and breast disease Go Clear

Limits Preview/Index History Clipboard Details

Display Summary Show: 20 Sort Send to Text

Items 1-20 of 37 Page 1 of 2 Next

Entrez PubMed

PubMed Services

Related Resources

1: Keyomarsi K, Tucker SL, Buchholz TA, Callister M, Ding Y, Hortobagyi GN, Bedrosian I, Knickerbocker C, Toyofuku W, Lowe M, Herliczek TW, Bacus SS. Related Articles, Links

Cyclin E and survival in patients with breast cancer.
N Engl J Med. 2002 Nov 14;347(20):1566-75. Erratum in: N Engl J Med 2003 Jan 9;348(2):186.
PMID: 12432043 [PubMed - indexed for MEDLINE]

2: Hoque A, Sneige N, Sahin AA, Menter DG, Bacus JW, Hortobagyi GN, Lippman SM. Related Articles, Links

Her-2/neu gene amplification in ductal carcinoma in situ of the breast.
Cancer Epidemiol Biomarkers Prev. 2002 Jun;11(6):587-90.
PMID: 12050101 [PubMed - indexed for MEDLINE]

3: Bacus SS, Altomare DA, Lyass L, Chin DM, Farrell MP, Gurova K, Gudkov A, Testa JR. Related Articles, Links

AKT2 is frequently upregulated in HER-2/neu-positive breast cancers and may contribute to tumor aggressiveness by enhancing cell survival.
Oncogene. 2002 May 16;21(22):3532-40.
PMID: 12032855 [PubMed - indexed for MEDLINE]

4: Esteva FJ, Hortobagyi GN, Sahin AA, Smith TL, Chin DM, Liang SY, Pusztai L, Buzdar AU, Bacus SS. Related Articles, Links

Expression of erbB/HER receptors, heregulin and P38 in primary breast cancer using quantitative immunohistochemistry.
Pathol Oncol Res. 2001;7(3):171-7.
PMID: 11692142 [PubMed - indexed for MEDLINE]

5: Grostern RJ, Slusker Shternfeld I, Bacus SS, Gilchrist K, Zimbric ML, Albert DM; Collaborative Ocular Melanoma Study Group. Related Articles, Links

Absence of type I estrogen receptors in choroidal melanoma: analysis of Collaborative Ocular Melanoma Study (COMS) eyes.
Am J Ophthalmol. 2001 Jun;131(6):788-91.
PMID: 11384577 [PubMed - indexed for MEDLINE]

6: Bacus SS, Gudkov AV, Lowe M, Lyass L, Yung Y, Komarov AP, Keyomarsi K, Yarden Y, Seger R. Related Articles, Links

Taxol-induced apoptosis depends on MAP kinase pathways (ERK and p38) and is independent of p53.
Oncogene. 2001 Jan 11;20(2):147-55.
PMID: 11313944 [PubMed - indexed for MEDLINE]

7: Bacus JW, Boone CW, Bacus JV, Follen M, Kelloff GJ, Kagan V, Lippman SM. Related Articles, Links

Image morphometric nuclear grading of intraepithelial neoplastic lesions with applications to cancer chemoprevention trials.
Cancer Epidemiol Biomarkers Prev. 1999 Dec;8(12):1087-94.
PMID: 10613341 [PubMed - indexed for MEDLINE]

8: Pinkas-Kramarski R, Lenferink AE, Bacus SS, Lyass L, van de Poll ML, Klapper LN, Tzahar E, Sela M, van Zoelen EJ, Yarden Y. Related Articles, Links

The oncogenic ErbB-2/ErbB-3 heterodimer is a surrogate receptor of the epidermal growth factor and betacellulin.
Oncogene. 1998 Mar 12;16(10):1249-58.
PMID: 9546426 [PubMed - indexed for MEDLINE]

9: Mixan B, Cohen BD, Bacus SS, Fell HP, Siegall CB. Related Articles, Links

Betacellulin-Pseudomonas toxin fusion proteins bind but are not cytotoxic to cells expressing HER4; correlation of EGFR for cytotoxic activity.
Oncogene. 1998 Mar 5;16(9):1209-15.
PMID: 9528863 [PubMed - indexed for MEDLINE]

10: Cohen BD, Siegall CB, Bacus S, Foy L, Green JM, Hellstrom I, Hellstrom KE, Fell HP. Related Articles, Links

Role of epidermal growth factor receptor family members in growth and differentiation of breast carcinoma.
Biochem Soc Symp. 1998;63:199-210. Review.
PMID: 9513724 [PubMed - indexed for MEDLINE]

11: Komarova EA, Zelnick CR, Chin D, Zeremski M, Gleiberman AS, Bacus SS, Gudkov AV. Related Articles, Links

Intracellular localization of p53 tumor suppressor protein in gamma-irradiated cells is cell cycle regulated and determined by the nucleus.
Cancer Res. 1997 Dec 1;57(23):5217-20.
PMID: 9393737 [PubMed - indexed for MEDLINE]

12: Bacus S, Chin D, Stewart J, Zelnick C, Mahvi D, Gilchrist K. Related Articles, Links

Potential use of image analysis for the evaluation of cellular predicting factors for therapeutic response in breast cancers.
Anal Quant Cytol Histol. 1997 Aug;19(4):316-28. Review.
PMID: 9267565 [PubMed - indexed for MEDLINE]

13: Gschwendtner A, Mairinger T. Related Articles, Links

DNA measurement on histologic slides. Does it work on human tissue?
Anal Quant Cytol Histol. 1997 Aug;19(4):294-300.
PMID: 9267562 [PubMed - indexed for MEDLINE]

14: Bacus SS, Yarden Y, Oren M, Chin DM, Lyass L, Zelnick CR, Kazarov A, Toyofuku W, Gray-Bablin J, Beerli RR, Hynes NE, Nikiforov M, Haffner R, Gudkov A, Keyomarsi K. Related Articles, Links

Neu differentiation factor (Heregulin) activates a p53-dependent pathway in cancer cells.
Oncogene. 1996 Jun 20;12(12):2535-47.
PMID: 8700512 [PubMed - indexed for MEDLINE]

15: Chen X, Levkowitz G, Tzahar E, Karunagaran D, Lavi S, Ben-Baruch N, Leitner O, Ratzkin BJ, Bacus SS, Yarden Y. Related Articles, Links

An immunological approach reveals biological differences between the two NDF/heregulin receptors, ErbB-3 and ErbB-4.
J Biol Chem. 1996 Mar 29;271(13):7620-9.
PMID: 8631797 [PubMed - indexed for MEDLINE]

16: Bacus SS, Chin D, Yarden Y, Zelnick CR, Stern DF. Related Articles, Links

Type 1 receptor tyrosine kinases are differentially phosphorylated in mammary carcinoma and differentially associated with steroid receptors.
Am J Pathol. 1996 Feb;148(2):549-58.
PMID: 8579117 [PubMed - indexed for MEDLINE]

17: Zhang L, Chang CJ, Bacus SS, Hung MC. Related Articles, Links

Suppressed transformation and induced differentiation of HER-2/neu-overexpressing breast cancer cells by emodin.
Cancer Res. 1995 Sep 1;55(17):3890-6.
PMID: 7543819 [PubMed - indexed for MEDLINE]

18: Siegall CB, Bacus SS, Cohen BD, Plowman GD, Mixan B, Chace D, Chin DM, Goetze A, Green JM, Hellstrom I, et al. Related Articles, Links

HER4 expression correlates with cytotoxicity directed by a heregulin-toxin fusion protein.
J Biol Chem. 1995 Mar 31;270(13):7625-30.
PMID: 7535774 [PubMed - indexed for MEDLINE]

19: Bacus SS, Zelnick CR, Chin DM, Yarden Y, Kaminsky DB, Bennington J, Wen D, Marcus JN, Page DL. Related Articles, Links

Medullary carcinoma is associated with expression of intercellular adhesion molecule-1. Implication to its morphology and its clinical behavior.
Am J Pathol. 1994 Dec;145(6):1337-48.
PMID: 7992839 [PubMed - indexed for MEDLINE]

☐ **20:** Colomer R, Lupu R, Bacus SS, Gelmann EP. Related Articles, Links

erbB-2 antisense oligonucleotides inhibit the proliferation of breast carcinoma cells with erbB-2 oncogene amplification.
Br J Cancer. 1994 Nov;70(5):819-25.
PMID: 7947086 [PubMed - indexed for MEDLINE]

Display Summary Show: 20 Sort Send to Text

Items 1-20 of 37 Page 1 of 2 Next

Sep 4 2003 10:00:42

National Library of Medicine

PubMed Nucleotide Protein Genome Structure PMC Taxonomy OMIM Bo

Search PubMed for BAcus and breast disease Go Clear

Limits Preview/Index History Clipboard Details

Display Summary Show: 20 Sort Send to Text

Items 1-3 of 3 One page.

Entrez PubMed

PubMed Services

Related Resources

1: Bacus SS, Kiguchi K, Chin D, King CR, Huberman E. Related Articles, Links

Differentiation of cultured human breast cancer cells (AU-565 and MCF-7) associated with loss of cell surface HER-2/neu antigen.
Mol Carcinog. 1990;3(6):350-62.
PMID: 1980588 [PubMed - indexed for MEDLINE]

2: Bacus SS, Goldschmidt R, Chin D, Moran G, Weinberg D, Bacus JW. Related Articles, Links

Biological grading of breast cancer using antibodies to proliferating cells and other markers.
Am J Pathol. 1989 Nov;135(5):783-92.
PMID: 2817079 [PubMed - indexed for MEDLINE]

3: Bacus S, Flowers JL, Press MF, Bacus JW, McCarty KS Jr. Related Articles, Links

The evaluation of estrogen receptor in primary breast carcinoma by computer-assisted image analysis.
Am J Clin Pathol. 1988 Sep;90(3):233-9.
PMID: 2458030 [PubMed - indexed for MEDLINE]